(No Model.)

H. B. INGRAHAM.

HEEL NAILING MACHINE.

No. 486,288. Patented Nov. 15, 1892.

FIG. 3.

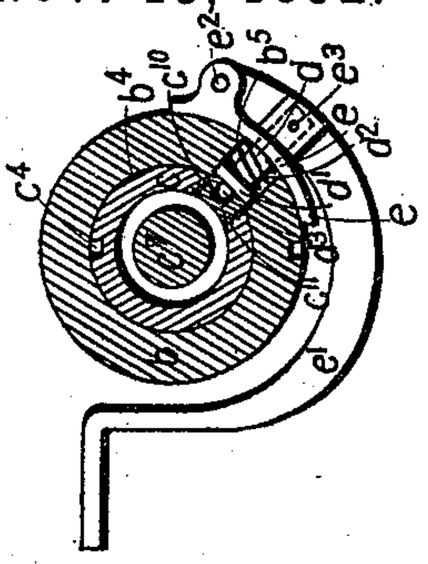


FIG. 4.

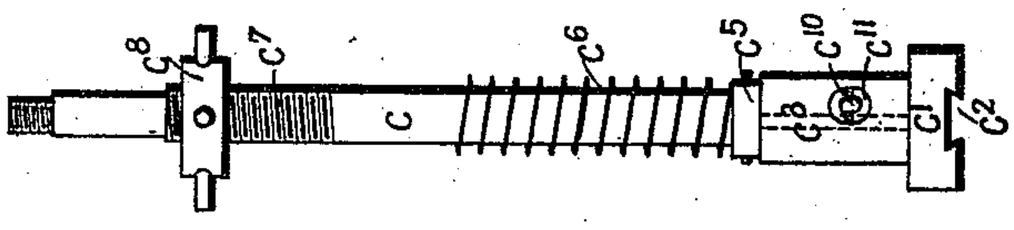


FIG. 2.

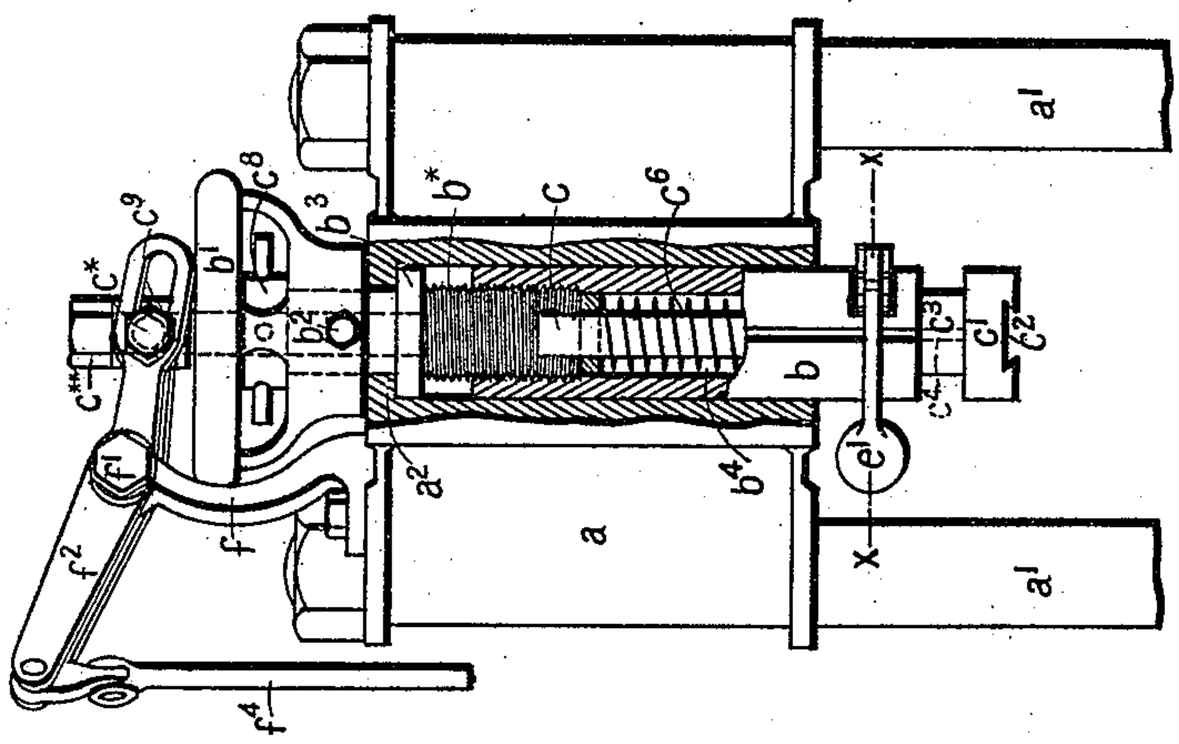
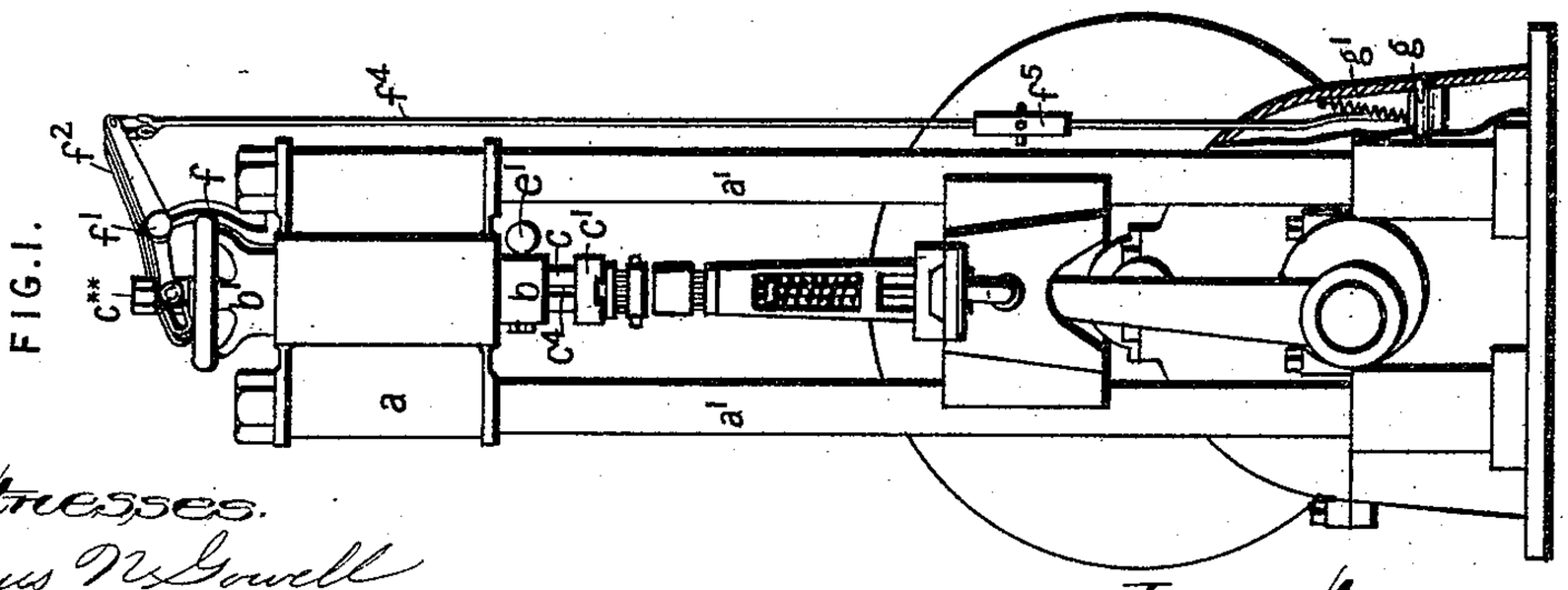


FIG. 1.



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UNITED STATES PATENT OFFICE.

HARRY BOARDMAN INGRAHAM, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO CHARLES CARROLL COLBY, OF LONDON, ENGLAND.

HEEL-NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 486,288, dated November 15, 1892.

Application filed April 25, 1892. Serial No. 430,562. (No model.)

To all whom it may concern:

Be it known that I, HARRY BOARDMAN INGRAHAM, shoemaker, a citizen of the United States of America, and a resident of Worcester, State of Massachusetts, have invented certain new and useful Improvements in Machines for Attaching Heels to Boots or Shoes, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to machines for attaching heels to boots or shoes and is intended to be used with machines which fix the heel either by staples or nails and wherein the heel is held by one part of the machine and the boot by a suitably-arranged jack, the said heel and boot when in the proper relative positions being forcibly brought together and the staples or nails thereby driven home.

My said invention is equally applicable to a machine which both fixes and slugs the heel as to a machine which fixes the heel only.

The present improvements consist of a device by which the head holding the heel suspended over the jack and staple-head upon which the inverted boot or shoe to which the said heel is to be attached rests is lowered before the process of attaching occurs. By this means the operator may see whether or not the heel which has been lowered to touch the heel-seat of the boot or shoe rests in the right position thereon, and if it does not he can readily adjust the boot or shoe as required.

The important part of my invention consists in mounting the part which holds the heel on a rod or spindle, which is adapted to slide up and down for a limited distance within the hollow bar instead of attaching it directly to the said hollow bar, as heretofore. This construction permits the heel to be lowered for the purpose of effecting the adjustment above referred to.

My said invention comprises means for retaining the part which carries the heel in its raised position, for releasing the said part in order to lower the heel, and for raising it by means of a foot-lever, as will be hereinafter set forth.

In the accompanying drawings, Figure 1 is a front elevation of a boot or shoe heeling and slugging machine embodying my invention. Fig. 2 is an enlarged rear view of the upper part of the same. Fig. 3 is a section on the line $x\,x$, Fig. 2, drawn to a still further enlarged scale. Fig. 4 is a detail view of the spindle, hereinafter described, which carries the heel to be fixed.

Similar letters of reference denote corresponding parts in all the drawings.

a is the head of the machine, which is carried by strong pillars a'.

b is a hollow bar mounted in the said head to serve as a resistance-block for the heel when attaching the same to the boot or shoe. The said bar is capable of sliding in the said head and is adjusted by means of a hand-wheel b', by which it can be raised and lowered to suit heels of different thicknesses. The hand-wheel is secured by a pinching-screw b^2 to a sleeve b^*, screwed into the bar b. The said hand-wheel rests on the top of the head a, and thus supports the weight of the bar b.

b^3 is a collar formed on the sleeve b^* to bear against an internal flange a^2 of the head a for the purpose of taking the upward thrust on the bar b when the heel is being attached.

According to my invention, instead of mounting the slug-driver plate which carries the heel directly on the bar b, I mount it on a rod or spindle c, which is adapted to slide up and down in the bar b, for a purpose hereinafter described. The said spindle is shown in detail in Fig. 4. On the lower end of the spindle is mounted a head c', which is slotted, as shown at c^2, in order to receive the dovetail projection on the slug-driver plate. The central aperture b^4 in the bar b is enlarged at its lower end to receive the part c^3 of the said head, which parts fits and is adapted to slide in the said enlargement, but is prevented from turning therein by a feather-key and keyway c^4.

c^5 is a collar secured on the spindle, and c^6 is a spring, which, when the spindle is inserted in the bar b, bears at its upper end against the top of the enlarged central aperture b^4 in the said bar and is compressed between the said bearing-surface and the collar c^5, and thereby tends to force the spindle downward through the hollow bar b. The part c^7 of the spindle is screw-threaded and provided with a wing-

nut c^8, which, as shown in Fig. 2, when in position rests on the top of the boss of the hand-wheel b'.

c^9 is a loose collar adapted to slide up and down on the upper end of the spindle, but is prevented from sliding off at the end by the nut c^{**}. The hollow bar b (shown in cross-section in Fig. 3) is provided with a radial hole b^5, in which is placed a pin d. The said pin d is provided with a collar d' and with a spring d^2, one end of which presses against the said collar and the other end of which abuts on a bracket e, fixed to the bar b. The spring tends to keep the said pin pressed in toward the spindle c.

e' is a lever pivoted at e^2 to the said bracket e and secured by a pin e^3 to the pin d, as shown clearly in Fig. 3.

c^{10} is a hole formed in the part c^3 of the head c' to receive the end d^3 of the pin d. Instead of forming the said hole directly in the part c^3, I prefer to form it in a hardened-steel bush c'', which is screwed or otherwise fixed in the said part. This bush when worn can be easily removed and replaced by an unworn bush and a good fit is thus preserved. When the spindle c is raised to its highest position, the pin d is opposite the hole c^{10}, and the end of the said pin is thus free to be forced into the said hole by the spring d^2. By this means the spindle can be locked in its raised position.

Attached to the head or cross-beam a is a bracket f, to which is pivoted at f' a pair of levers f^2 or a single forked lever. The end or ends of the said lever or levers f^2 is or are slotted, as shown at f^3, to receive pins or trunnions c^*, which radially project from the collar c^9. To the other end of the lever f^2 a link f^4 is attached, which connects the lever f^2 with a foot-lever g.

f^5 is an adjusting-nut provided at some part of the rod f^4 in order to permit the length of the said rod to be regulated. The foot-lever g is provided with a spring g', which tends to keep the lever in a raised position.

The operation of my improved device is as follows: Assuming the spindle c is in the position shown in Fig. 2, the workman first presses down the foot-lever g, and thereby raises the rod or spindle c through the medium of the link f^4, lever f^2, and the collar c^9 until the head c' of the spindle is close against the lower end of the bar b, and, as before mentioned, the hole c^{10} is opposite the pin d. The pin d being then pressed inward by its spring d^2 enters the hole c^{10} and holds the rod or spindle up. The operator now releases the foot-lever and places the boot to be heeled on the jack and then attaches the nail or slug box, with the heel fixed thereto, to the bottom of the rod c. The lever e' is now pressed back to withdraw the pin d from the hole or recess c^{10} and the rod c falls by its own weight, assisted by the pressure of the spring c^6, bringing the heel onto its seat on the boot. If the position of the heel on its seat is not satisfactory, the rod or spindle and heel may be raised slightly by pressing on the foot-lever g, thus relieving the pressure thereon, and the boot may then be adjusted on the post until the heel is in its right place on the boot. The operation of slugging and staple-driving are then proceeded with in the usual manner. During the act of fixing the heel the rod or spindle carrying the slug-driver plate is forced up into its highest position, where it is retained by means of the locking-pin d, as above described. It is thus clear of the jack and does not interfere with the removal of the heeled boot and the placing of another boot on the jack.

By means of the wing-nut c^8, which can be turned on the hand-wheel b', the tension of the spring c^6 may be adjusted, together with the distance between the part c' and the bar b when the rod or spindle is in its lowest position, and by turning the said hand-wheel b' the distance between the bar b and the jack is varied, as heretofore, to suit heels of different heights.

What I claim is—

1. In a boot-heeling machine, the combination of a cross-head, a hollow bar b, adjustable in the said cross-head, and a spindle c, carrying the heel to be attached, said spindle being mounted axially within the bar b and capable of sliding up and down therein, substantially as described.

2. In a boot-heeling machine, the combination of a cross-head, a hollow bar b, adjustable in the said cross-head, a spindle c, carrying the heel to be attached, said spindle being mounted axially within the bar b and capable of sliding up and down therein, a spring-actuated pin for retaining the said spindle in its highest position with respect to the bar b, and a lever for disengaging the said pin when required, substantially as described.

3. In a boot-heeling machine, the combination of a cross-head, a hollow bar b, adjustable in the said cross-head, a spindle c, carrying the heel to be attached, said spindle being mounted axially within the bar b and capable of sliding up and down therein, a spring for forcing the spindle c downward, and means for raising the said spindle manually, subsantially as described.

4. In a boot-heeling machine, the combination of a cross-head, a hollow bar b, adjustable in the said cross-head, a spindle c, carrying the heel to be attached, said spindle being mounted axially within the bar b and capable of sliding up and down therein, a spring for forcing the spindle c downward, and a nut c^8 for adjusting the travel of the spindle c, substantially as described.

5. In a boot-heeling machine, the combination of a cross-head, a hollow bar b, adjustable in the said cross-head, a spindle c, carrying the heel to be attached, said spindle being mounted axially within the bar b and capable of sliding up and down therein, a col-

lar c^9, mounted to slide on the spindle, but limited in its upward movement by a nut c^{**}, a lever f^2, engaging with the said collar, and a foot-lever g, connected with the lever f^2 by an adjustable link f^4, substantially as described.

6. In a boot-heeling machine, the combination of a cross-head, a hollow bar b, adjustable in the said cross-head, a spindle c, carrying the heel to be attached, said spindle being mounted axially within the bar b and capable of sliding up and down therein, a spring c^6, a collar c^9, mounted to slide on the spindle and engage with a nut c^{**}, screwed on the spindle, a lever f^2, engaging with the collar c^9, an adjustable link f^4, connecting the said lever f^2 with a foot-lever g, a spring g' for raising the said foot-lever, a spring-actuated pin d, carried by the bar b and adapted to engage with the spindle c, and a lever e' for withdrawing the said pin d, substantially as described.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

HARRY BOARDMAN INGRAHAM.

Witnesses:
GEORGE HARRISON,
EBEN SHEFFIELD.